

Development of a new Program in Biomedical Instrumentation Technology in Technology Colleges in Kingdom of Saudi Arabia

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Abstract - During the recent years the country has witnessed a proliferation of clinics, medical centers and hospitals all equipped with up to date high technology medical instrumentation. This in turn needs qualified personnel capable of installing, operating and maintaining these medical instruments. To qualify such qualified technicians, a program of biomedical instrumentation technology is needed to be found. In this paper the new proposed program of biomedical instrumentation technology in technology colleges will be presented.

I. INTRODUCTION

Saudi Arabia has health services, which can be compared to any advanced country in the world, to meet the medical needs of its citizens and expatriates. During the recent years the country has witnessed a proliferation of clinics, medical centers and hospitals all equipped with up to date high technology medical instrumentation varying in sophistication and complexity from simple devices such as temperature measurement device to complex and expensive systems such as computerized magnetic resonance imaging system. As a result, large numbers of qualified professionals were required to cope with the situation in different fields of medical care and especially in the field of medical instrumentation. This in turn needs qualified personnel capable of installing, operating and maintaining these medical instruments.

Due to the non-availability of such program which qualifies the medical instrumentation technicians except two programs on the university level offered in King AbdulAziz University and King Saud University [1]. The first program started in 1981 as Biomedical Engineering option within the department of Electrical Engineering. The second program started in 1984 as an independent Biomedical Instrumentation. Program. Both programs are undergraduate programs enable graduated students to have the Bachelor of Science (B.Sc) degree. This is not enough to cover the need of the specialized technicians in the medical instrumentation technology. So a new program has been established to start in the beginning of next academic year 2001/2002. This program will prepare student to stand up to this challenging task through a well-balanced curriculum that will provide the student with the required theoretical and practical skills.

In this paper the new proposed program of biomedical instrumentation technology in technology colleges will be presented.

II. PROPOSAL AND OBJECTIVES

The opportunity of this proposal has been confirmed by the results of communications with the hospitals, clinics, biomedical engineers and medical institutes managers. This program has just been submitted to the teaching commission of the Technology colleges to be approved and if approved,

should start in the next academic year 2001/2002. It will be the first of its kind to be installed in Saudi Arabia that will enable the student after completing the program to have the Diploma degree.

The proposed program includes five semesters such that the total of each semester are 18, 19, 19, 18 and 16 units respectively. In addition to the five semesters there is one complete semester before the last one is for training in one of the listed hospitals in the country which provide the medical services such as Ministry of Health Services, Ministry of Interior, Ministry of Defense, National Guard, King Faisal Specialist Hospital, University Hospitals and Private Hospitals under supervision of one of the department members.

Courses in this proposed program are divided into three groups: General College Courses, Electronics and Electrical Courses available in the electronics and Control program and Biomedical Technology courses.

This first group is 30 study units and includes the following:

- English courses
- Arabic and Islamic Culture courses
- Mathematics
- Physics
- Computer introductory courses.

The second group is 30 study units and includes the following:

- Electrical Engineering
- Computer Programming
- Engineering Mathematics
- Electronic Devices and Circuits
- Electrical and Electronic Measurements

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- Control Engineering
- Digital Electronics
- Power Electronics
- Basic Electrical and Electronics Workshop

The third and major group is 30 study units and includes the following:

- Basic Medical Knowledge
- Biochemistry
- Biomedical Instrumentation
- Electrical Machines in Biomedical Instrumentation
- Computer Applications in Biomedical Instrumentation
- Biomedical Control Systems
- Biomedical Imaging Instrumentation
- Biomedical Laboratory Instrumentation
- Safety in Hospitals
- Selected Topics in Biomedical Instrumentation
- Biomedical Instrumentation Workshop

The purpose of this program is threefold:

- 1) To qualify the specialized biomedical technician who is able to understand, operate, maintain and repair the biomedical instruments.
- 2) To cover the tremendous demand for qualified Saudi personnel capable of installing, operating and maintaining the biomedical instruments in hospitals and clinics around the country.
- 3) To participate in future in serving the community by holding short training courses in maintenance and operation of biomedical instruments in addition to the technical consultation when purchasing the biomedical instruments.

III. CONCLUSION

The proposed program for the education and training in biomedical technology to achieve its purpose that will be delivered by the specialized people in biomedical instrumentation technology is discussed. This program is an attempt to train the people in the biomedical technology, to contribute to cope with the expansion in both size and scope of health care delivery system demand in the country and to meet the demand for such professionals for today and in future.

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REFERENCES

- [1] Y. Haggag, M. Al-Turaiki, and A. Nassef " Biomedical Engineering Education in Saudi Arabia Kingdom" *Proceedings of the 10th Annual International Conference of IEEE*, pp. 1911, Engineering in Medicine and Biology Society, New Orleans, Louisiana, U.S.A. November 4-7, 1988.

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